

Common Multiples

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CONCEPT

1

Common Multiples

Here you'll learn to identify multiples and find common multiples for pairs of numbers.

Have you ever had a scheduling conflict? Scheduling conflicts are common all the time.



As the sixth grade has been planning for the social, each cluster formed a decoration committee. Each decoration committee was given the opportunity every few days to meet in the art room and make decorations for the social. Some students worked on banners, some worked on posters, some worked with streamers. All of the students had a terrific time. The big conflict is that every few days both groups seem to be in the art room at the same time and there are never enough supplies for everyone. Mr. Caron the art teacher wants to figure out why this keeps happening.

Cluster 6A gets to work in the art room every two days. Cluster 6B gets to work in the art room every three days.

If Mr. Caron could figure out when the groups are both in the art room on the same day, then he would have more art supplies ready. Or on those days, he could plan for the students to work on a bigger project.

Which days will the students all be in the art room together?

Pay attention and at the end of the Concept you will help solve the dilemma.

Guidance

In mathematics, you have been working with ***multiples*** for a long time. One of the first things that you probably learned was how to count by twos or threes. Counting by twos and threes is counting by multiples. When you were small, you didn't call it "counting by multiples," but that is exactly what you were doing.

What is a multiple?

A multiple is the product of a quantity and a whole number. What does that mean exactly? It means that when you take a number like 3 that becomes the quantity. Then you multiply that quantity times different whole numbers.

$$3 \times 2 = 6, 3 \times 3 = 9, 3 \times 4 = 12, 3 \times 5 = 15, 3 \times 6 = 18$$

Listing out these products is the same as listing out multiples.

3, 6, 9, 12, 15, 18.....

You can see that this is also the same as counting by threes.

The dots at the end mean that these multiples can go on and on and on. Each numbers has an ***infinite*** number of multiples.

List five multiples for 4.

To do this, we can think of taking the quantity 4 and multiplying it by 2, 3, 4, 5, 6....

$$4 \times 2 = 8, 4 \times 3 = 12, 4 \times 4 = 16, 4 \times 5 = 20, 4 \times 6 = 24$$

Our answer is 8, 12, 16, 20, 24....

What is a common multiple?

A **common multiple** is a multiple that two or more numbers have in common.

What are the common multiples of 3 and 4? To start to find the common multiples, we first need to write out the multiples for 3 and 4. To find the most common multiples that we can, we can list out multiples through multiplying by 12.

$$3, 6, 9, \mathbf{12}, 15, 18, 21, \mathbf{24}, 27, 30, 33, \mathbf{36}$$

$$4, 8, \mathbf{12}, 16, 20, \mathbf{24}, 28, 32, \mathbf{36}, 40, 44, 48$$

The common multiples of 3 and 4 are 12, 24, 36.

Now it is time for you to practice.

Example A

List out five multiples of 6.

Solution: 6, 12, 18, 24, 30, 36, 48

Example B

List out five multiples of 8.

Solution: 8, 16, 24, 32, 40, 48

Example C

What are the common multiples of 6 and 8?

Solution: 24 and 48

Have you figured out how to work with the scheduling dilemma in the art room?

Let's think about how to solve the dilemma. We want to know the days that the students will meet in the art room. We need common multiples to figure this out.

Since 6A meets every two days, two will be the first quantity.

Since 6B meets every three days, three will be the second quantity.

Now let's list the multiples of two and three. The common multiples will show the days that the students will both meet in the art room.

$$2 \ 4 \ 6 \ 8 \ 10 \ 12 \ 14 \ 16 \ 18 \ 20 \ 22 \ 24 \ 26 \ 28 \ 30$$

$$3 \ 6 \ 9 \ 12 \ 15 \ 18 \ 21 \ 24 \ 27 \ 30$$

The common multiples are 6, 12, 18, 24, 30.

The students will both be in the art room on these days.

Vocabulary

Here are the vocabulary words in this Concept.

Multiple the product of a quantity and a whole number

Common Multiple a number or numbers that two or more multiples have in common.

Guided Practice

Here is one for you to try on your own.

What are the common multiples of 3 and 7?

Answer

To figure this out, we can first list the multiples of each number.

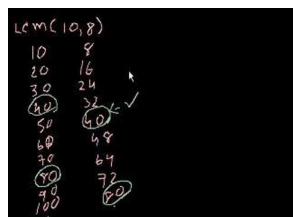
3, 6, 9, 12, 15, 18, 21, 24, 27, 30

7, 14, 21, 28, 35, 42

The only common multiple between 3 and 7 is 21.

Video Review

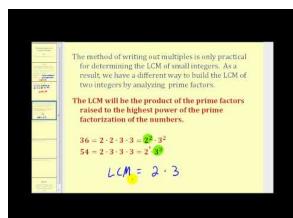
Here are videos for review.



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Practice

Directions: List the first five multiples for each of the following numbers.

1. 3

2. 5

3. 6

4. 7

5. 8

Directions: Find two common multiples of each pair of numbers.

6. 3 and 5

7. 2 and 3

8. 3 and 4

9. 2 and 6

10. 3 and 9

11. 5 and 7

12. 4 and 12

13. 5 and 6

14. 10 and 12

15. 5 and 8